Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	("20010019238").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/05/04 09:31
S7	874	(257/368).CCLS.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/05/04 09:33
S8	77	S7 and nano$	US-PGPUB; USPAT; USOCR	OR	OFF	2005/05/04 09:34
S5	454	nanotube$1 same nanoparticle$1	US-PGPUB; USPAT; USOCR	OR	OFF	2005/05/04 10:04
S10	114	S9 and @pd>"20041207"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/05/04 10:05
S9	638	nanotube$1 same nanoparticle$1	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/05/04 10:05
S11	7	("5773921" | "6097138" | "6448701" | "6448709" | "6664722" | "6664727" | "6710534").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/05/04 10:50
S12	1	("20040013597").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2005/05/04 12:03

Search: nanoparticle AND nanotubes

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ANSWER 6 © 2005 ACS on STN

Title

Nanocomposites formed by deposition of TiN **nanoparticles** on carbon **nanotubes**

Author

Shiraishi, Mitsuru; Koshio, Akira; Deno, Hiroshi; Kokai, Fumio

Organization

Department of Chemistry for Materials, Mie University, Mie, 514−8507, Japan

Publication Source

New Diamond and Frontier Carbon Technology (2005), 15(2), 91−97

Identifier−CODEN

NDFTFF

ISSN

1344−9931

Publisher

Scientific Publishing Division of MYU K.K.

Abstract

Nanocomposites consisting of multiwall carbon **nanotubes** (MWNTs) and TiN **nanoparticles** were fabricated. For the deposition of TiN **nanoparticles** on two types of MWNT, we used laser ablation of TiN in the presence of N_2 gas. TiN **nanoparticles** with diams. of 25 to 60 nm were partly deposited on as−grown MWNTs. On the other hand, agglomerated **nanoparticles** covered ultrasonically treated MWNTs. We discuss the size distribution and morphol. of the TiN **nanoparticles** on the basis of clusters and **nanoparticles** formed in the gas phase and the surface properties of the MWNTs.

Document Type

Journal

Language

English

Accession Number

2005:372322 CAPLUS

Search: **nanoparticle AND nanotubes AND transistor**

Search: **nanoparticle AND nanotubes AND transistor AND magnetic**

Display from CAplus

ANSWER 3 © 2005 ACS on STN

Title

Control of growth orientation for carbon **nanotubes**

Author

Lee, Ki–Hong; Cho, Jeong–Min; Sigmund, Wolfgang

Organization

Department of Materials Science and Engineering, University of Florida, Gainesville, FL, 32611, USA

Publication Source

Applied Physics Letters (2003), 82(3), 448–450

Identifier–CODEN

APPLAB

ISSN

0003–6951

Publisher

American Institute of Physics

Abstract

Laterally aligned carbon **nanotubes** were synthesized on substrates over iron **nanoparticles** using chem. vapor deposition. In addn., aligned carbon **nanotubes** grown vertically and with tilt angle to the substrates were produced, which means that it is possible to grow aligned carbon **nanotubes** at any angle relative to the substrate. The growth direction of the carbon **nanotubes** was controlled by a **magnetic** field that is applied in the process of adhering catalyst particles on silicon oxide substrates from dispersion. The ferromagnetic property of the iron **nanoparticles** fixes them in a defined orientation under **magnetic** field, which results in aligned growth of the carbon **nanotubes**. These results indicate that carbon **nanotubes** preferentially grow from certain facets of the catalyst particles, suggesting a crucial clue in investigating the growth mechanism of carbon **nanotubes**. The laterally aligned carbon **nanotubes** could make it possible to integrate them in nanoelectronic devices, such as a channel for field–effect **transistors**.

Document Type

Journal

Language

ANSWER 4 © 2005 ACS on STN

Title

The nanostructure and electrical properties of SWNT bundle networks grown by an 'all–laser' growth process for nanoelectronic device applications

Author

El Khakani, M. A.; Yi, J. H.

Organization

Institut National de la Recherche Scientifique, INRS–Energie, Materiaux et Telecommunications, Varennes, QC, J3X–1S2, Can.

Publication Source

Nanotechnology (2004), 15(10), S534–S539

Identifier–CODEN

NNOTER

ISSN

0957–4484

Publisher

Institute of Physics Publishing

Abstract

We report on an 'all–laser' synthesis approach that permits the control of the lateral growth of single wall **nanotubes** (SWNTs) on SiO2/Si substrates at selected locations where **nanoparticles** catalysts were first deposited. This novel two–step growth process uses the same UV laser (KrF excimer; .lambda. = 248 nm) to deposit, in a first step, the CoNi **nanoparticle** catalysts on patterned SiO2/Si substrates and, in a subsequent step, to grow the SWNTs. At. force microscopy and micro–Raman spectroscopy revealed that the 'all–laser' process leads to the formation of horizontal random networks of SWNT bundles, that bridge two adjacent **nanoparticle** strips. The diam. of the SWNTs was found to be .apprx.1.1 nm, while that of the bundles is generally in the 10–15 nm range. The current (I)–voltage (VSD) characteristics of the fabricated SWNT devices confirmed that the random networks of SWNT bundles exhibit a p–type field–effect **transistor** behavior. Conductance (G)–gate voltage (VG) curves not only demonstrated that transport through the bundle networks was dominated by pos. carriers (holes) but also that the bundles consist of mixts. of semiconducting and metallic SWNTs. The extremely high efficiency of our 'all–laser' growth process in producing high–quality SWNTs together with its relative simplicity definitely open new prospects for the development and integration of novel architectures of nanodevices based on SWNT networks.

Document Type

Journal

Language

English

Accession Number

2005:121453 CAPLUS

Publisher Item Identifier

S 0957–4484(04)75224–1

Cited Reference or Reference

(1) Avouris, P; Carbon nanotube electronics; Chem Phys 2002, V281, P429

(2) Bandow, S; Effect of the Growth Temperature on the Diameter Distribution and Chirality of Single–Wall Carbon Nanotubes; Phys Rev Lett 1998, V80, P3779

(3) Baughman, R; Carbon nanotubes–the route toward applications; Science 2002, V297, P787

(4) Bradley, K; Flexible Nanotube Electronics; Nano Lett 2003, V3, P1353

(5) Braidy, N; Effect of laser intensity on yield and physical characteristics of single wall carbon nanotubes produced by the Nd:YAG laser vaporization method; Carbon 2002, V40, P2835

ANSWER 7

Title

Growth of aligned carbon **nanotubes** and their application

Author

Choi, Wonbong

Organization

Mechanical & Materials Engineering, Florida International University, Miami, FL, FL 33174, USA

Publication Source

Abstracts, 56th Southeast Regional Meeting of the American Chemical Society, Research Triangle Park, NC, United States, November 10–13 (2004), GEN–045 Publisher: American Chemical Society, Washington, D. C.

Identifier–CODEN

69FWAQ

Abstract

We discuss the central issues to be addressed for realizing carbon nanotube (CNT) future electronic devices. We focus on the selective growth, electron energy bandgap engineering and device integration. We have introduced nanotemplate to control the selective growth, length and diam. of CNT. Vertically aligned CNTs are synthesized for developing a vertical CNT–field effect **transistor** (FET). The ohmic contact of the CNT/metal interface is formed by rapid thermal annealing. Diam. control, synthesis of y–shape CNT and surface modification of CNT open the possibility for energy band gap modulation. Y–junction singlewall carbon **nanotubes** (SWNTs) are synthesized using controlled catalysts by chem. vapor deposition. Mo–doped Fe **nanoparticles** supported by aluminum oxide particles are used as catalysts for the growth of Y–junction singlewall carbon **nanotubes**. Most of Y–junctions consist of three individual SWNTs with different diams. Radial breathing mode peaks in Raman spectra show that our sample has both metallic and semiconducting **nanotubes**, indicating the possible formation of Y–branching with different elec. properties. The Surface modification of the carbon **nanotubes** plays an important role for their utilization in various applications. The surface of grown **nanotubes** was modified and the wettability on **nanotubes** was investigated. This functionalisation tends to change the surface of **nanotubes** into hydrophilic thus increasing its sensitivity. The elec. characterization of these modified **nanotubes** was performed since it is expected that by adapting analytes onto the modified **nanotubes**, the elec. transport property of CNT may be changed. A concept of ultra–high d. **transistor** based on the vertical–CNT array and nonvolatile memory based on the top gate structure with oxide–nitride–oxide charge trap is also presented.

Document Type

Conference; Meeting Abstract

Language

English

Accession Number

```
2004:982694   CAPLUS
```

ANSWER 12 © 2005 ACS on STN

Title

Dispersed growth of carbon **nanotubes** on a substrate for devices

Inventor Name

Gabriel, Jean–Christophe; Bradley, Keith; Collins, Philip

Patent Assignee

Nanomix. Inc., USA

Publication Source

PCT Int. Appl., 25 pp.

Identifier–CODEN

PIXXD2

Patent Information

```
PATENT NO.            KIND   DATE       APPLICATION NO.        DATE
---------------       ----   --------   --------------------   --------
WO 2004040671          A2    20040513   WO 2003-US19808        20030620
WO 2004040671          A3    20040701
    W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO,
        CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM,
        HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS,
        LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG,
        PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT,
        TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
    RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG,
        KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
        FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF,
        BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
```

Priority Application Information

```
US 2002-177929        A      20020621
```

Abstract

Methods of forming a dispersion of nanostructures, a distribution of C **nanotubes**, and an array of nanostructure devices, such as sensors or **transistors**, are described. The methods involve providing a substrate, applying growth promoter to at least a portion of the substrate, exposing the substrate and the growth promoter to a plasma, and then forming a dispersion of nanostructures from the growth promoter. The plasma disperses the growth promoter as distinct, isolated growth promoter **nanoparticles** between .apprx.1 nm and 50 nm in size over the substrate. An array of nanostructure devices includes a dispersion of nanostructures and an array of electrodes in contact with the nanostructures. Nanostructures are removed from some areas, leaving regions contg. nanostructures to provide elec. communication between two or more electrodes, thus forming an array of nanostructure devices.

Qualifier

processes

Registry Number and Structure

CAS Registry Number

7782-50-5

Author Substance Name

Chlorine

Qualifier

processes

Registry Number and Structure

CAS Registry Number

13693-09-9

Author Substance Name

Xenon fluoride (XeF_6)

Role

NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

Text Modification

(growth promoter; dispersed growth of carbon **nanotubes** on substrate in device fabrication)

Accession Number

2004:392760 CAPLUS

Document Number

140:398541

ANSWER 13

Title

Field effect **transistor** assembly and an integrated circuit array

Inventor Name

Graham, Andrew; Hofmann, Franz; Hoenlein, Wolfgang; Kretz, Johannes; Kreupl, Franz; Landgraf, Erhard; Luyken, Richard Johannes; Roesner, Wolfgang; Schulz, Thomas; Specht, Michael

Patent Assignee

Infineon Technologies Ag, Germany; et al.

Publication Source

PCT Int. Appl., 36 pp.

Identifier-CODEN

PIXXD2

Patent Information

```
PATENT NO.          KIND  DATE      APPLICATION NO.       DATE
---------------     ----  --------  --------------------  --------
WO 2004040668        A2   20040513  WO 2003-DE3612        20031030
WO 2004040668        A3   20040708
    W:  US
    RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT,
        LU, MC, NL, PT, RO, SE, SI, SK, TR
DE 10250830          A1   20040519  DE 2002-10250830      20021031
```

Priority Application Information

```
DE 2002-10250830     A    20021031
```

Abstract

The invention relates to a field effect **transistor** assembly and an integrated circuit array. The field effect **transistor** assembly contains a substrate, a 1st wiring plane with a 1st source/drain region on the substrate and a 2nd wiring plane with a 2nd source/drain region above the 1st wiring plane. The field effect **transistor** assembly also comprises at least one vertical nanoelement as a channel region, which is situated between and coupled to both wiring planes. The nanoelement is at least partially surrounded by elec. conductive material, forming a gate region, whereby elec. insulating material is provided between the nanoelement and the elec. conductive material to act as a gate insulating layer.

International Patent Classification

International Patent Classification, Main

H01L051-20

Document Type

Patent

Language

German

Supplementary Indexing

field effect **transistor** integrated circuit array nanostructure semiconductor device

IT Related Fields

Indexing

Concept Group

Concept Heading

Memory devices

Text Modification

(DRAM (dynamic random access); field effect **transistor** assembly and an integrated circuit array)

IT Related Fields

Indexing

Concept Group

Concept Heading

MOS devices

Text Modification

(complementary; field effect **transistor** assembly and an integrated circuit array)

ANSWER 25 © 2005 ACS on STN

Title

Efficient Formation of Iron **Nanoparticle** Catalysts on Silicon Oxide by Hydroxylamine for Carbon Nanotube Synthesis and Electronics

Author

Choi, Hee Cheul; Kundaria, Summit; Wang, Dunwei; Ajavey, Ali; Wang, Qian; Rolandi, Marco; Dai, Hongjie

Organization

Department of Chemistry, Stanford University, Stanford, CA, 94305, USA

Publication Source

Nano Letters (2003), 3(2), 157–161

Identifier–CODEN

NALEFD

ISSN

1530–6984

Publisher

American Chemical Society

Abstract

Iron contg. **nanoparticles** are found to spontaneously form on hydroxylated SiO_2 substrates when immersed in a freshly mixed aq. soln. of $FeCl_3$ and hydroxylamine. Upon calcination, a submonolayer of uniformly distributed iron oxide **nanoparticles** can be derived and used to catalyze the growth of single–walled carbon **nanotubes** by chem. vapor deposition. This simple method affords clean single–walled nanotube films on SiO_2. The soln. phase catalyst deposition approach allows for submicron scale catalyst patterning. Patterned growth of **nanotubes** with this catalyst retains high degrees of surface cleanliness and leads to arrays of nanotube electronic devices including field effect **transistors**. The population of hydroxyl groups on SiO_2, reaction time, and pH of the solns. are found to be important to the deposition of **nanoparticles** through a surface–mediated hydroxylamine/$FeCl_3$ chem.

Document Type

Journal

Language

English

Supplementary Indexing

iron **nanoparticle** catalyst hydroxylamine silica carbon nanotube synthesis electronics; FET carbon nanotube synthesis iron **nanoparticle** catalyst hydroxylamine silica

IT Related Fields

Indexing

Concept Group

Concept Heading

Nanotubes

Text Modification

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